

## WHAT IS CLAIMED

1. A vehicle mounted AC electrical generator system, said vehicle including a prime mover and a compartment for said prime mover, said AC electrical generator system comprising:

an AC electrical generator substantially positioned outside said prime mover compartment and having a mechanical power input connection for driving said AC electrical generator to produce electricity, and

a device receiving mechanical power from said prime mover and transferring said mechanical power to said AC electrical generator mechanical power input connection.

2. Apparatus as claimed in claim 1 wherein said prime mover has an auxiliary power output providing said mechanical power to said transfer device.

3. Apparatus as claimed in claim 2 wherein said auxiliary power device comprises a power take-off output providing a rotatable input.

4. Apparatus as claimed in claim 3 wherein said transfer device comprises a rotatable connection between said power take-off output and extending to a point adjacent said AC electrical generator, and

a device for providing a predetermined RPM ratio between said rotatable connection and the mechanical power input connection of said AC electrical generator, said device being connected to said AC electrical generator.

5. Apparatus as claimed in claim 4 wherein said RPM ratio device comprises a pair of pulleys having diameters relative to one another to achieve said predetermined RPM ratio and a belt interconnecting said pulleys.

6. Apparatus as claimed in claim 5 wherein said belt comprises a toothed belt interconnecting said pulleys.

7. Apparatus as claimed in claim 4 wherein said rotatable connection comprises a shaft having a universal joint at the output of said power take-off output and another universal joint adjacent to said AC electrical generator.

8. Apparatus as claimed in claim 3 wherein said power take-off output is selectively connectable to said prime mover.

9. Apparatus as claimed in claim 8 wherein said system further comprises a solenoid for selectively engaging and disengaging said power take-off unit.

10. Apparatus as claimed in claim 1 wherein:  
said vehicle has a chassis incorporating generally parallel frame rails,  
said apparatus further comprises a device to mount said AC electrical generator between said frame rails.

11. Apparatus as claimed in claim 10 wherein said mounting device comprises clamps for clamping said AC electrical generator to at least one of said frame rails.

12. A vehicle mounted AC electrical generator system, said vehicle including a prime mover controlled by a control system to a predetermined RPM, said AC electrical generator system comprising:

an AC electrical generator positioned in said vehicle and having a mechanical power input connection for driving said AC electrical generator to produce electricity,  
a device receiving mechanical power from said prime mover and transferring said mechanical power to said AC electrical generator mechanical power input connection,

said mechanical power device incorporating a fixed RPM ratio to match the RPM of the prime mover to the operational RPM of said AC electrical generator.

13. Apparatus as claimed in claim 12 wherein said mechanical power device incorporates a step up RPM ratio to increase the RPM from said prime mover to said AC electrical generator.

14. Apparatus as claimed in claim 13 wherein said prime mover operates at a preselected RPM and over a variable operational RPM range as dictated by said control system, and

wherein said prime mover operates the transfer device when said prime mover is at said preselected RPM.

15. Apparatus as claimed in claim 12 wherein the control system for said prime mover has an electronic control module.

16. Apparatus as claimed in claim 12 wherein said prime mover has an auxiliary power output and said transfer device connects between said auxiliary power output and the mechanical power input connection of said AC electrical generator.

17. Apparatus as claimed in claim 16 wherein said transfer device comprises :  
a connection between the rotary output of said auxiliary power output and a point adjacent said AC electrical generator,

and a means for establishing a predetermined RPM ratio between said rotatable output connection and the input connection of said AC electrical generator.

18. Apparatus as claimed in claim 17 wherein said RPM ratio device increases the RPM between said auxiliary power takeoff output and said AC electrical generator.

19. Apparatus as claimed in claim 17 wherein said AC generator operates at 3600 RPM during operation.

20. Apparatus as claimed in claim 17 wherein said AC generator operates at 3,000 RPM during operation.

5 21. Apparatus as claimed in claim 15 wherein said electronic control system supplies fuel to said prime mover at a rate and condition to vary the power output of said prime mover, whereby said operational RPM of said AC electrical generator is maintained substantially constant irrespective of variations on electrical loads applied to said AC electrical generator.

10 22. A vehicle mounted AC electrical generator system, said vehicle including a prime mover controlled by a control system, said AC electrical generator system, comprising:

an AC electrical generator positioned in said vehicle and having a mechanical power input connection for driving said AC electrical generator to produce electricity,

15 a device releasably engageable to receive mechanical power from said prime mover and transfer said mechanical power to said AC electrical generator mechanical power input connection,

a device operable to engage and disengage said mechanical power transfer device from said prime mover.

20 23. Apparatus as claimed in claim 22 wherein said releasably engageable device comprises a power takeoff output shaft having a mechanism for releasably engaging said transfer device.

24. Apparatus as claimed in claim 23 wherein:

said power takeoff output shaft has a driven gear,

said prime mover has a driving gear providing a rotatable output from said prime mover and displaceable into and out of engagement with said power output shaft driven gear, and

said system has a device for displacing said driving gear into and out of engagement with said driven gear.

25. Apparatus as claimed in claim 24 wherein said device for displacing said driving gear is a solenoid receiving an electrical input.

26. Apparatus as claimed in claim 25 wherein said solenoid valve biases said driving gear to a disengaged position in the absence of an electrical signal and to an engaged position in the presence of an electrical signal.

27. Apparatus as claimed in claim 26 wherein said system further comprises a device interconnecting said solenoid valve to said prime mover control system for the purpose of said power takeoff output in the event certain operating parameters are detected.

28. Apparatus as claimed in claim 22 wherein said engaging and disengaging device is interconnected with the control system for said prime mover to control engagement of said AC electrical generator dependent upon inputs from said control system.

29. Apparatus as claimed in claim 28 wherein said engaging and disengaging device transfers mechanical power to said AC electrical generator when certain operating parameters exist.

30. Apparatus as claimed in claim 28 wherein said vehicle has a further control system for controlling vehicle parameters and wherein said engaging and disengaging device is also responsive to vehicle control parameters to transfer mechanical power to said AC electrical generator.

5 31. Apparatus as claimed in claim 30 wherein said prime mover has an engine control module, and a transmission control module and wherein said engaging and disengaging device is responsive to electrical control signals, said AC electrical generator system comprising a relay device receiving inputs from said engine control module and said transmission control module for enabling operation of said AC electrical generator when  
10 certain control parameters exist in said engine control module and said transmission control module.

32. Apparatus as claimed in claim 28 wherein said engaging and disengaging device disconnects said mechanical power to said AC generator when certain operating parameters are present.

15 33. Apparatus as claimed in claim 32 wherein said AC generating system has an output box for providing electrical load connection to said AC generator and wherein the operating parameter is temperature above a given level.

34. Apparatus as claimed in claim 33 further comprising an emergency operation switch to disengage the AC generator from said prime mover.

20 35. A vehicle mounted AC electrical generator system, said vehicle including a prime mover and a compartment for said prime mover, said AC electrical generator system comprising

an AC electrical generator positioned outside said prime mover compartment and having a mechanical power input means for driving said AC electrical generator to produce electricity, and

means for receiving mechanical power from said prime mover and transferring said mechanical power to said AC electrical generator mechanical power input means.

36. Apparatus as claimed in claim 35 wherein said vehicle has an aft load carrying section, and wherein:

said AC electrical generator is mounted adjacent said load carrying section, and said apparatus further comprises an electrical outlet box positioned in said load carrying section.

37. Apparatus as claimed in claim 36 wherein said outlet box has a waterproof cover.

38. Apparatus as claimed in claim 36 wherein said load-carrying section has a bed and sidewalls, said outlet box being mounted to one of said sidewalls.

39. Apparatus as claimed in claim 38 further comprising an electrical cable extending from said generator to said outlet box, at least a portion of said cable extending along the inside of one of said frame rails.

40. A method of adding an AC electrical generator to a vehicle having a support frame and powered by a prime mover located in a prime mover compartment, said method comprising the steps of:

mounting said AC electrical generator outside said prime mover compartment, and in an available location in said support frame,

providing a mechanical connection between said prime mover and said AC electrical generator.

41. A method as claimed in claim 40 wherein said AC electrical generator operates at a predetermined RPM and said prime mover provides rotary output and has an operating condition during which said prime mover operates at a preselected RPM, and wherein said method further comprises the steps of providing predetermined RPM ratio in said mechanical connection so that said AC electrical generator operates at said predetermined RPM when said prime mover operates at said preselected RPM.

42. A method as claimed in claim 41 wherein said vehicle has a control system and wherein said mechanical connection is engageable and disengageable, said method further comprising the step of integrating the operation of said AC generator with the control system of said vehicle.

43. Apparatus as claimed in claim 1 wherein said mechanical power transfer device comprises a hydraulic drive providing a rotatable output to said AC generator and said hydraulic drive.

44. Apparatus as claimed in claim 43 wherein said prime mover operates at a preselected RPM and said AC generator operates at a predetermined RPM, and control device for providing a predetermined RPM ratio between said prime mover and the mechanical power input connection of said AC electrical generator.

45. Apparatus as claimed in claim 44 wherein said vehicle and prime mover operate over a range of RPMs and wherein:

said control device provides a variable RPM ratio to said hydraulic drive, and



wherein said system further comprises a device for sensing prime mover RPM and hydraulic drive output RPM and operating said control device to maintain said predetermined AC generator RPM irrespective of said prime mover RPM.